

CLAIMS

What is claimed is:

1. A method of synchronizing a clock in an electronic device having image capture capabilities, comprising:

receiving an image of a time keeping device from the electronic device with image

5 capture capabilities;

determining a current time using image analysis operations on the image of the time keeping device; and

setting the current time on a clock associated with the electronic device with image capture capabilities.

10 2. The method of claim 1 wherein the time keeping device is selected from a set of time keeping devices including: a wall clock, a wristwatch and a drawing of a clock.

3. The method of claim 2 wherein the time keeping device displays time in a format selected from a set of formats including: an analog clock format, a digital clock format and a combination of analog and digital clock formats.

15 4. The method of claim 1 wherein the image capture capabilities are derived from a camera integrated into the electronic device.

5. The method of claim 1 wherein the image capture capabilities are derived from a camera remotely connected to the electronic device over a network.

20 6. The method of claim 5 wherein the remote connection between the camera and the electronic device is selected from a set of connections including: a wired connection and a wireless connection.

7. The method of claim 1 wherein the image capture capabilities are not utilized and the image of the time keeping device is generated synthetically from existing time, day and date information.

25 8. The method of claim 1 wherein determining a current time using image analysis includes:

determining if the time keeping device in the image displays time using either an analog clock format or a digital clock format;

performing optical character recognition to obtain the current time through when the
30 determination indicates the displayed time is compatible with the digital clock format; and

identifying hand and dial positions in the image to obtain the current time when the determination indicates the time is displayed using the analog clock format.

9. The method of claim 8 wherein performing optical character recognition to obtain the current time further includes:

35 dividing a digital clock portion of the image into numeric segment values;

selecting a font corresponding to the numeric segment values;

comparing each of the numeric segment values with a filter corresponding to the potentially different numeric segment values; and

interpreting the numeric segment values to determine the current time in response to
40 the comparison.

10. The method of claim 9 wherein the font is selected from a ranked sequence of fonts typically used to display time in time keeping devices.

11. The method of claim 9 wherein the dividing further includes selecting one or more

timing indicators selected from a set including: a time-of-day indicator specifying either

45 “AM” or “PM” time of day, a month indicator specifying the current month, a date indicator specifying the current date and a year indicator specifying a current year.

12. The method of claim 9 wherein identifying hand and dial positions in the image to obtain the current time further includes:

identifying a relative position of hands in the image to each other;

50 determining an orientation of a dial on the time keeping device;

correlating the relative position of hands to the orientation of the dial on the time keeping device;

obtaining the current time based upon the position of the hands and the orientation of the dial on the time keeping device.

55 13. The method of claim 12 wherein correlating the relative position of hands to the orientation of the dial uses a lookup table with angles of the hands and positions relative to the dial on the time keeping device.

14. An apparatus for synchronizing a clock in an electronic device having image capture capabilities, comprising:

60 a processor capable of executing instructions;

a memory containing instructions when executed cause the processor to receive an image of a time keeping device from the electronic device with image capture capabilities, determine a current time using image analysis operations on the image of the time keeping device and set the current time on a clock associated with the electronic device with image
65 capture capabilities.

15. The apparatus of claim 14 wherein the time keeping device is selected from a set of time keeping devices including: a wall clock and a wristwatch.

16. The apparatus of claim 15 wherein the time keeping device displays time in a format selected from a set of formats including: an analog clock format, a digital clock format and a
70 combination of analog and digital clock formats.

17. The apparatus of claim 14 wherein the image capture capabilities are derived from a camera integrated into the electronic device.

18. The apparatus of claim 14 wherein the image capture capabilities are derived from a camera remotely connected to the electronic device over a network.

75 19. The apparatus of claim 18 wherein the remote connection between the camera and the electronic device is selected from a set of connections including: a wired connection and a wireless connection.

20. The apparatus of claim 14 wherein the image capture capabilities are not utilized and the image of the time keeping device is generated synthetically from existing time, day and
80 date information.

21. The apparatus of claim 14 wherein instructions that determine a current time using image analysis further includes instructions that,

determine if the time keeping device in the image displays time using either an analog clock format or a digital clock format, perform optical character recognition to obtain the
85 current time through when the determination indicates the displayed time is compatible with the digital clock format and identify hand and dial positions in the image to obtain the current time when the determination indicates the time is displayed using the analog clock format.

22. The apparatus of claim 21 wherein the instructions that perform optical character recognition to obtain the current time further includes instructions that,

90 divide a digital clock portion of the image into numeric segment values, select a font corresponding to the numeric segment values, compare each of the numeric segment values with a filter corresponding to the potentially different numeric segment values and interpret the numeric segment values to determine the current time in response to the compare.

23. The apparatus of claim 22 wherein the font is selected from a ranked sequence of
95 fonts typically used to display time in time keeping devices.

24. The apparatus of claim 22 wherein the instructions that divide further include instructions to select one or more timing indicators from a set including: a time-of-day indicator specifying either “AM” or “PM” time of day, a month indicator specifying the current month, a date indicator specifying the current date and a year indicator specifying a
100 current year..

25. The apparatus of claim 22 wherein the instructions that identify the hand and dial positions in the image to obtain the current time further includes instructions that,
 identify a relative position of hands in the image to each other, determine an orientation of a dial on the time keeping device, correlate the relative position of hands to the
105 orientation of the dial on the time keeping device, obtain the current time based upon the position of the hands and the orientation of the dial on the time keeping device.

26. The apparatus of claim 25 wherein the instructions that correlate the relative position of hands to the orientation of the dial use a lookup table with angles of the hands and positions relative to the dial on the time keeping device.

- 110 27. An apparatus for synchronizing a clock in an electronic device having image capture capabilities, comprising:
- means for receiving an image of a time keeping device from the electronic device with image capture capabilities;
- means for determining a current time using image analysis operations on the image of
- 115 the time keeping device; and
- means for setting the current time on a clock associated with the electronic device with image capture capabilities.
28. The method of claim 1 wherein the current time is set at a later point in time using a time stamp associated with the image of the time keeping device.
- 120 29. The apparatus of claim 14 wherein the current time is set at a later point in time using a time stamp associated with the image of the time keeping device